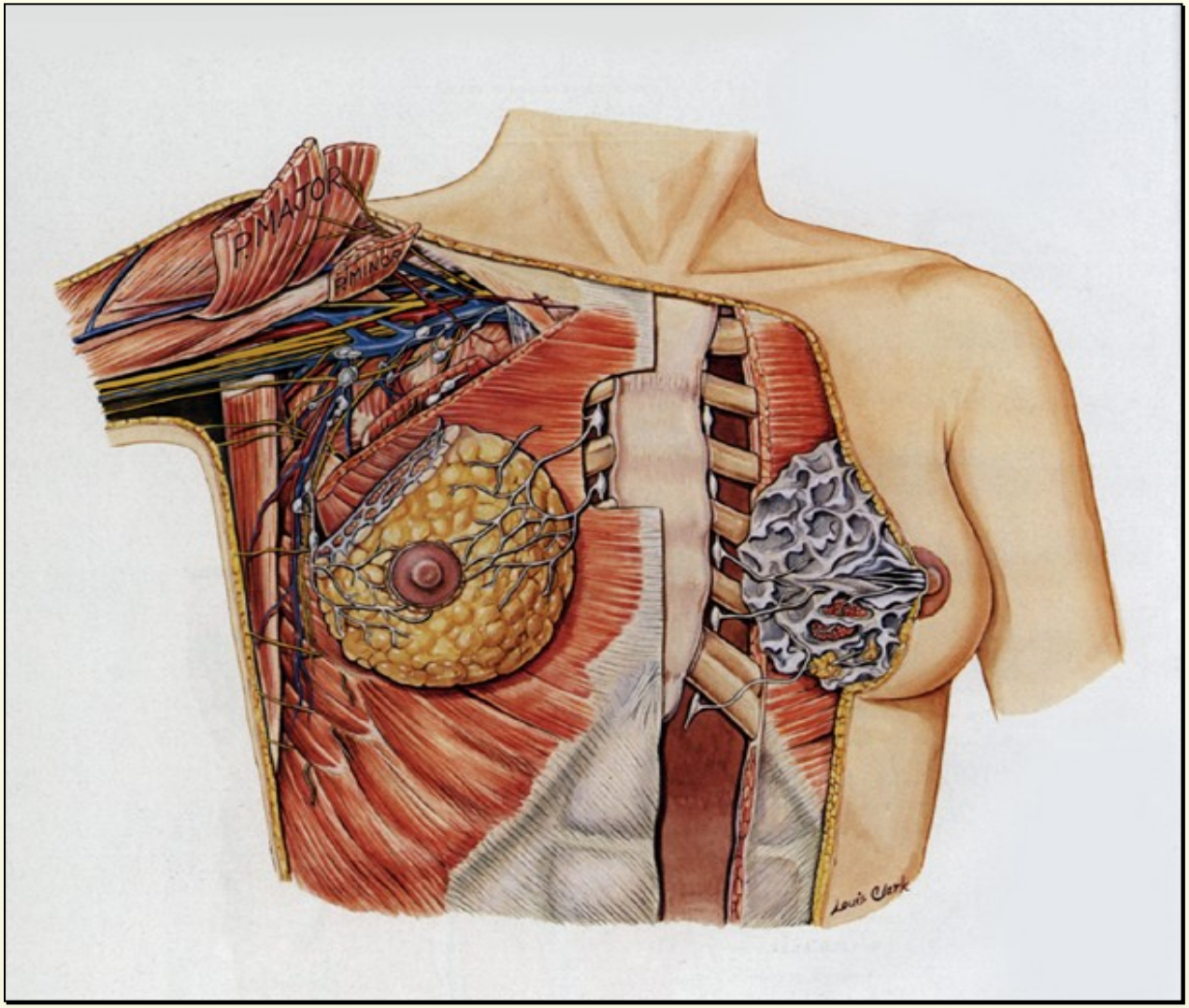
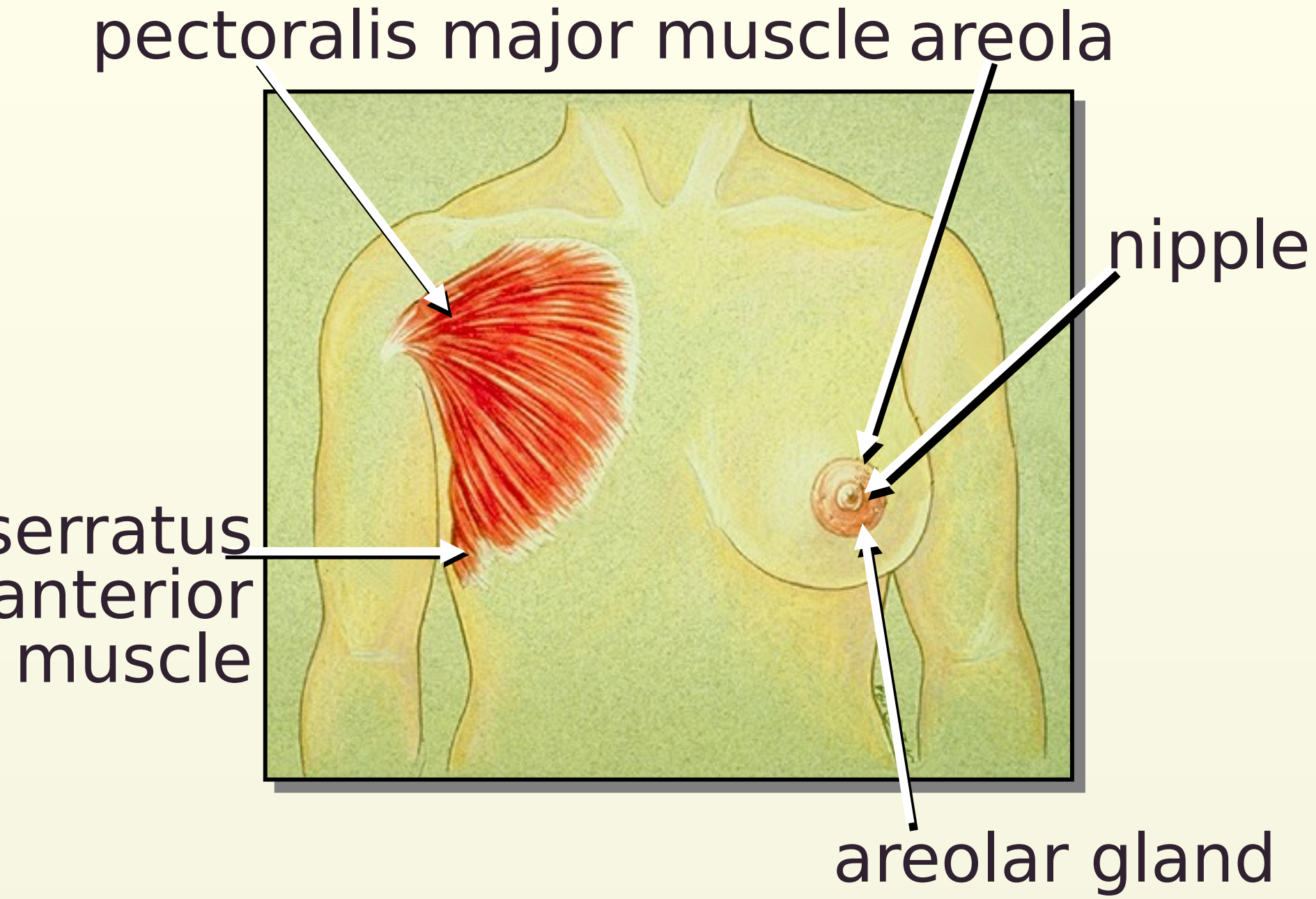
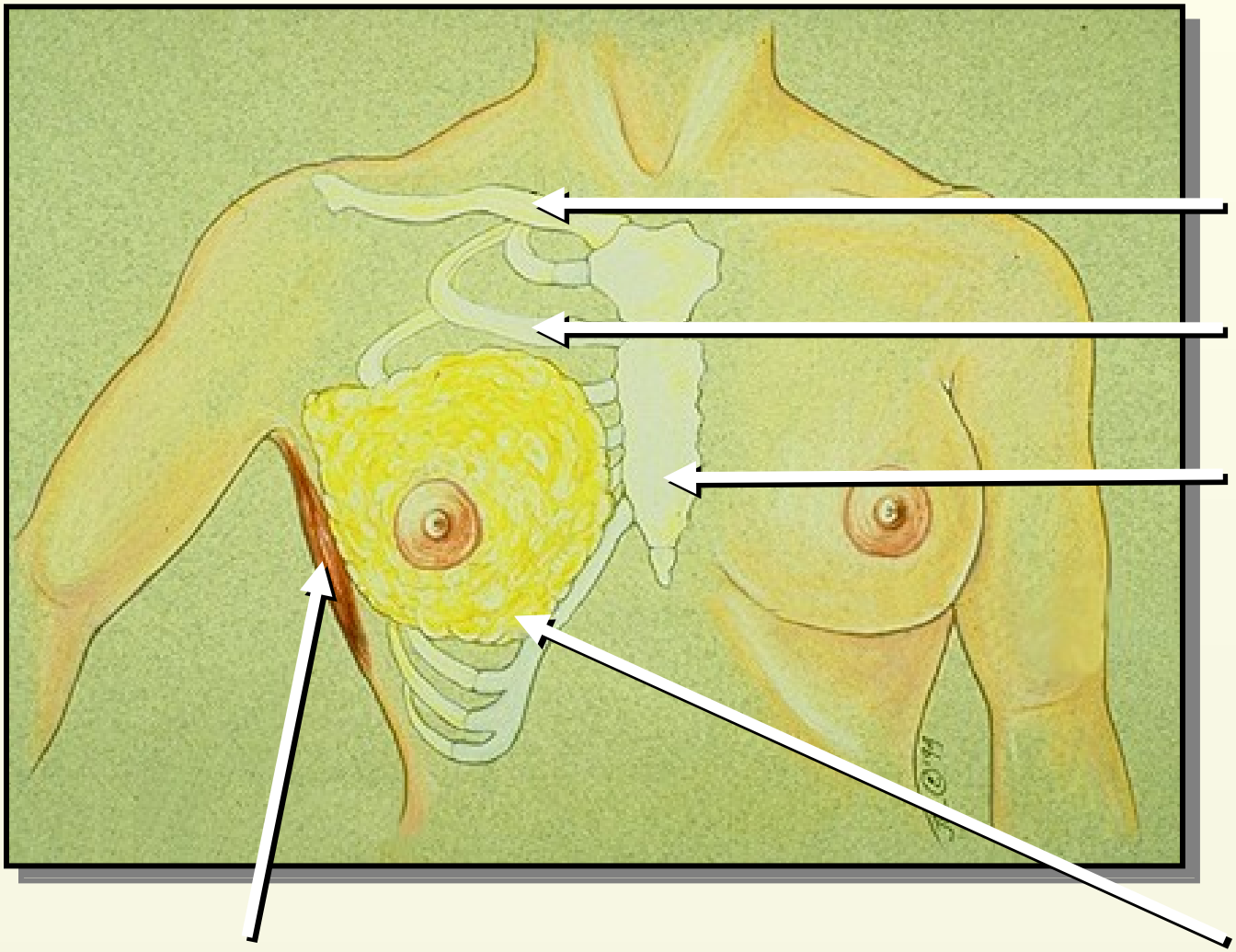
# MODULE II:

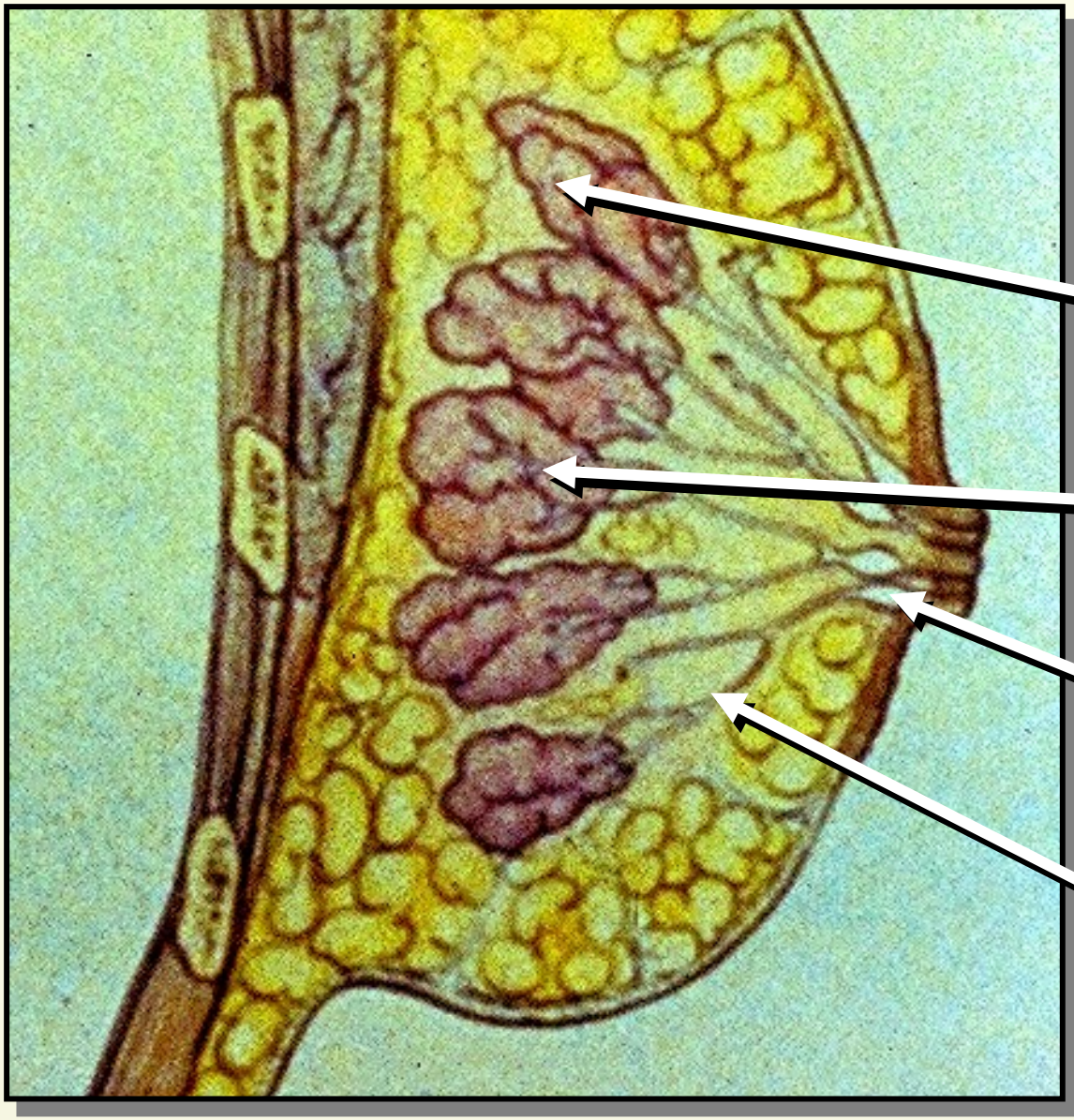
# Review of Breast Anatomy and Physiology

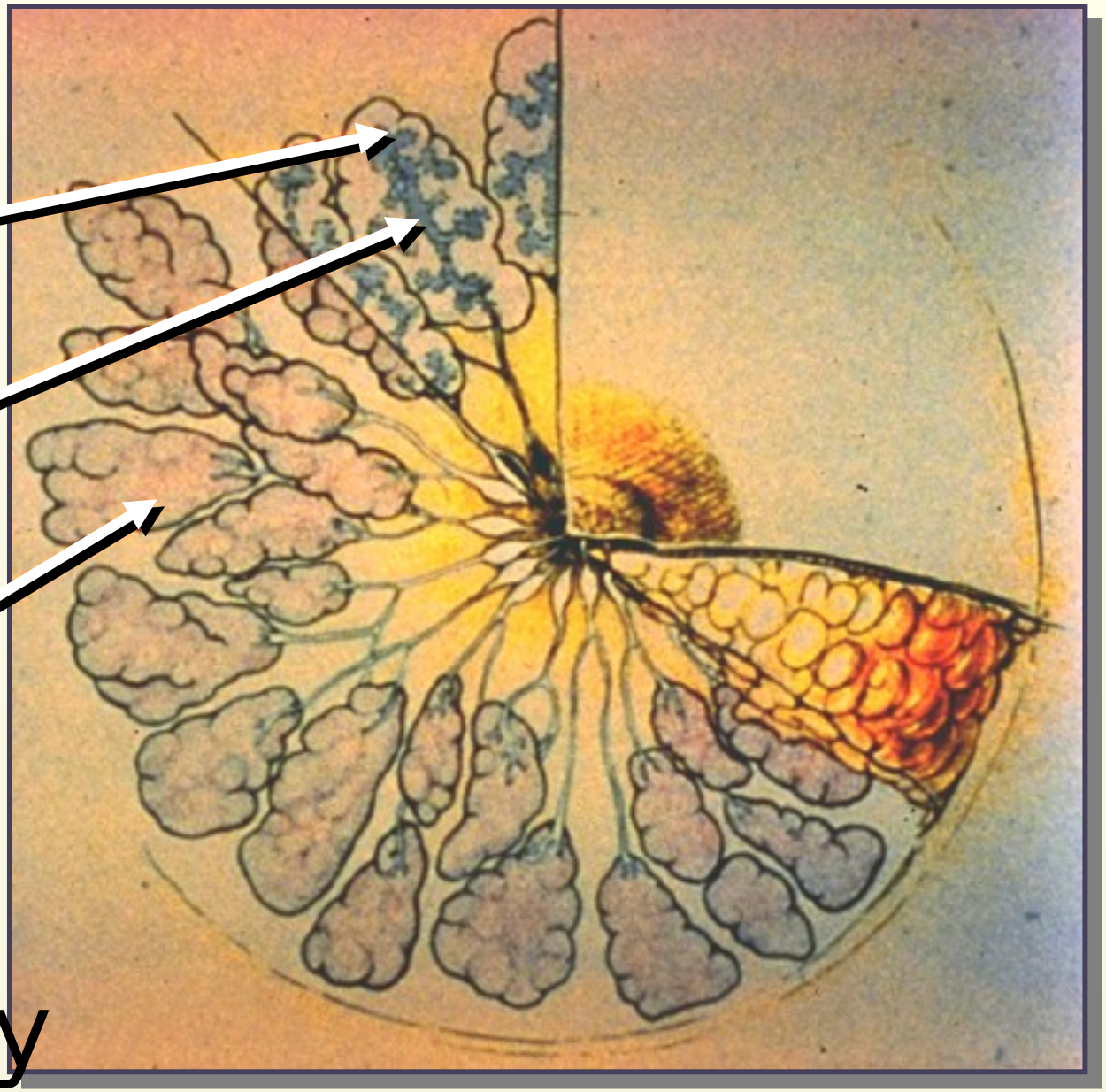
# Anatomy of the Breast




pectoralis major muscle
areola
nipple
serratus
anterior
muscle
areolar gland

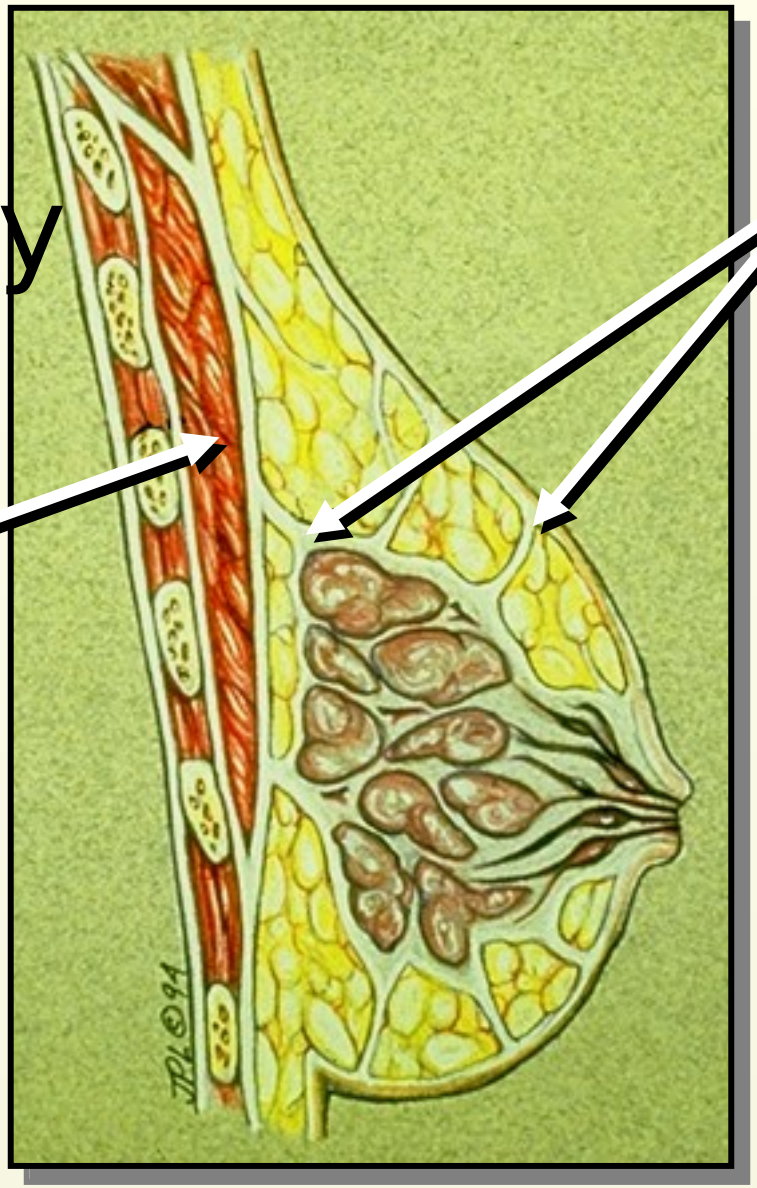

clavicle
2nd rib
sternum
latissimus dorsi muscle
inframammary rid


lobes
lobules
lactiferous sinuses
ducts



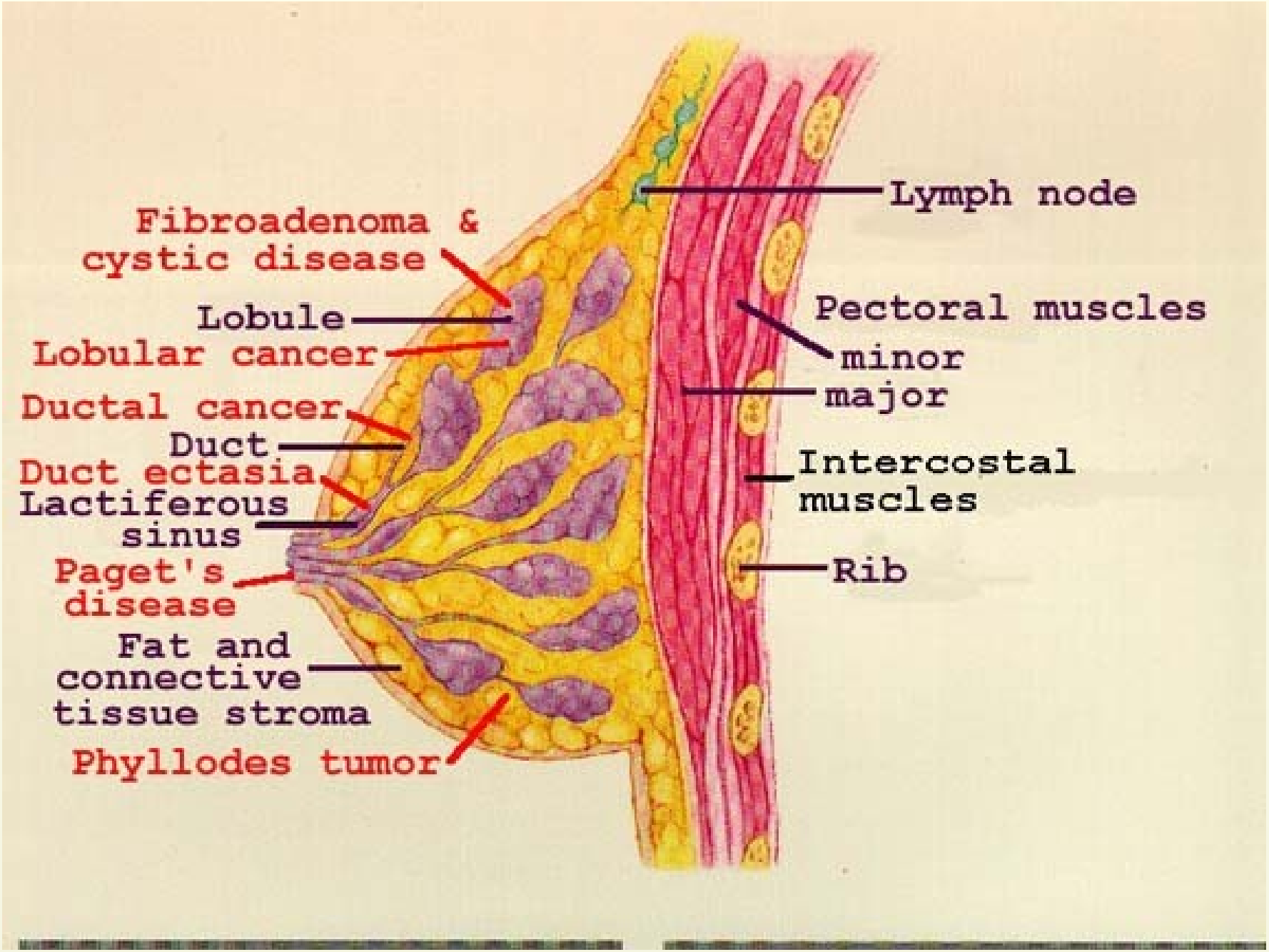

# Breast Anatomy

# Breast Anatomy

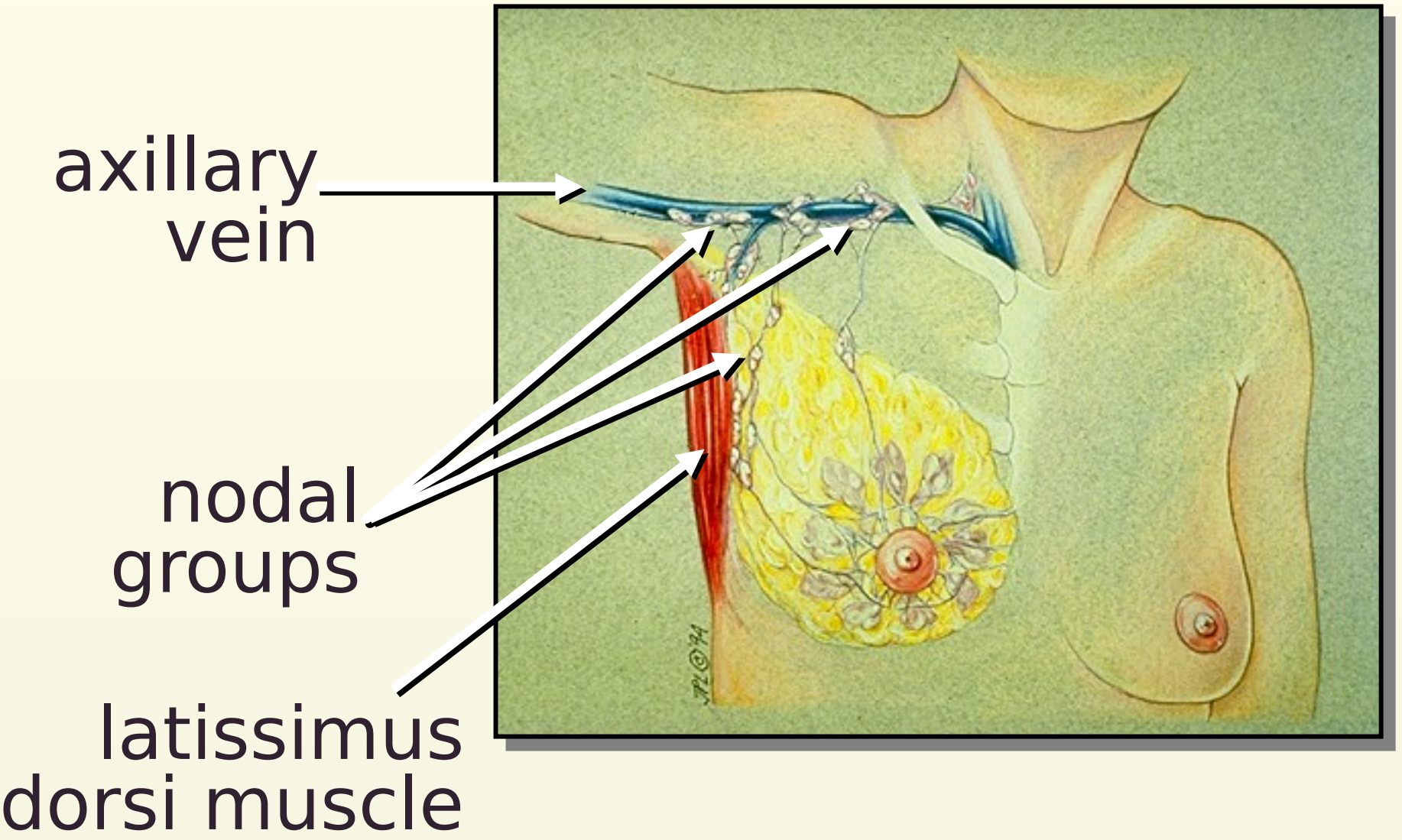


Cooper's ligaments

pectoralis major muscle


Lymph node
Fibroadenoma & cystic disease
Lobule
Lobular cancer
Ductal cancer
Duct
Duct ectasia
Lactiferous sinus
Paget's disease
Fat and connective tissue stroma
Phyllodes tumor
Pectoral muscles
minor
major
Intercostal muscles
Rib

# Axillary Lymph Nodes

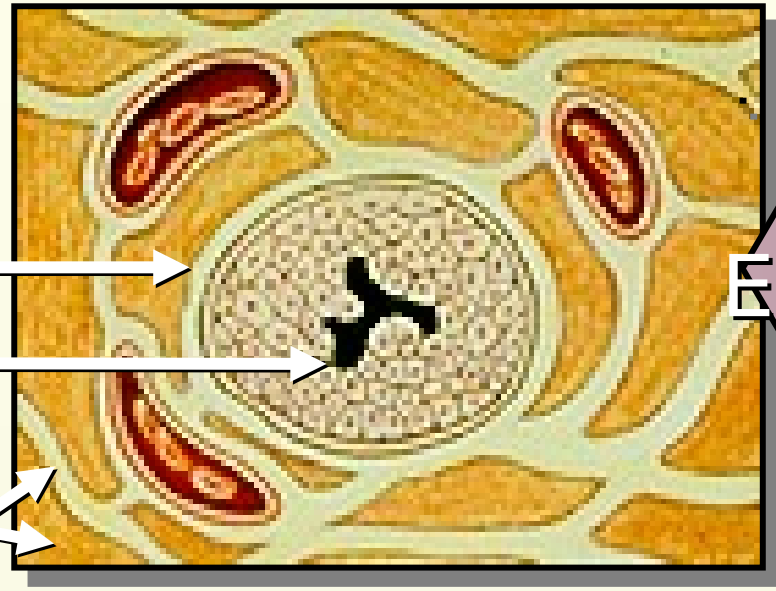


# Follicular Phase

acinus

duct

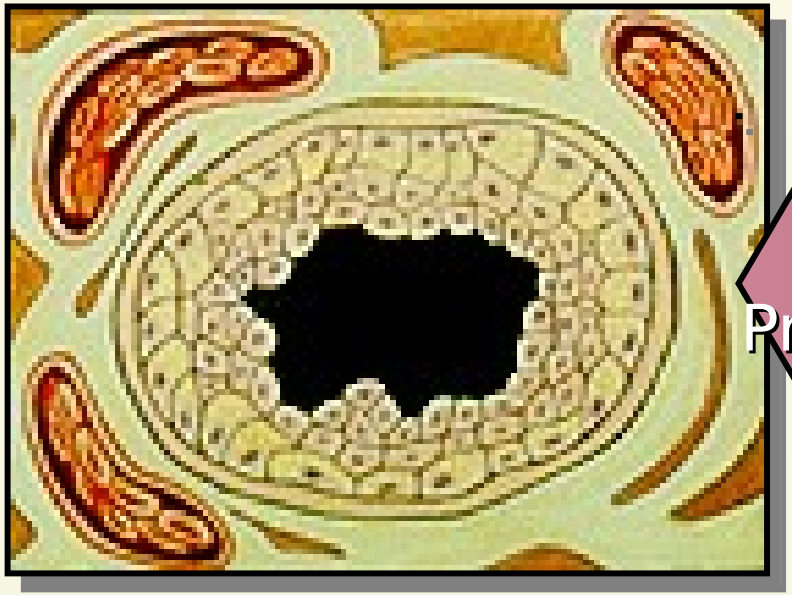
stromal tissue



Estrogen

# Luteal Phase

Engorged, dilated vessels, duct, stromal tissue



Estrogen
Progesterone

# Stages of Breast Development

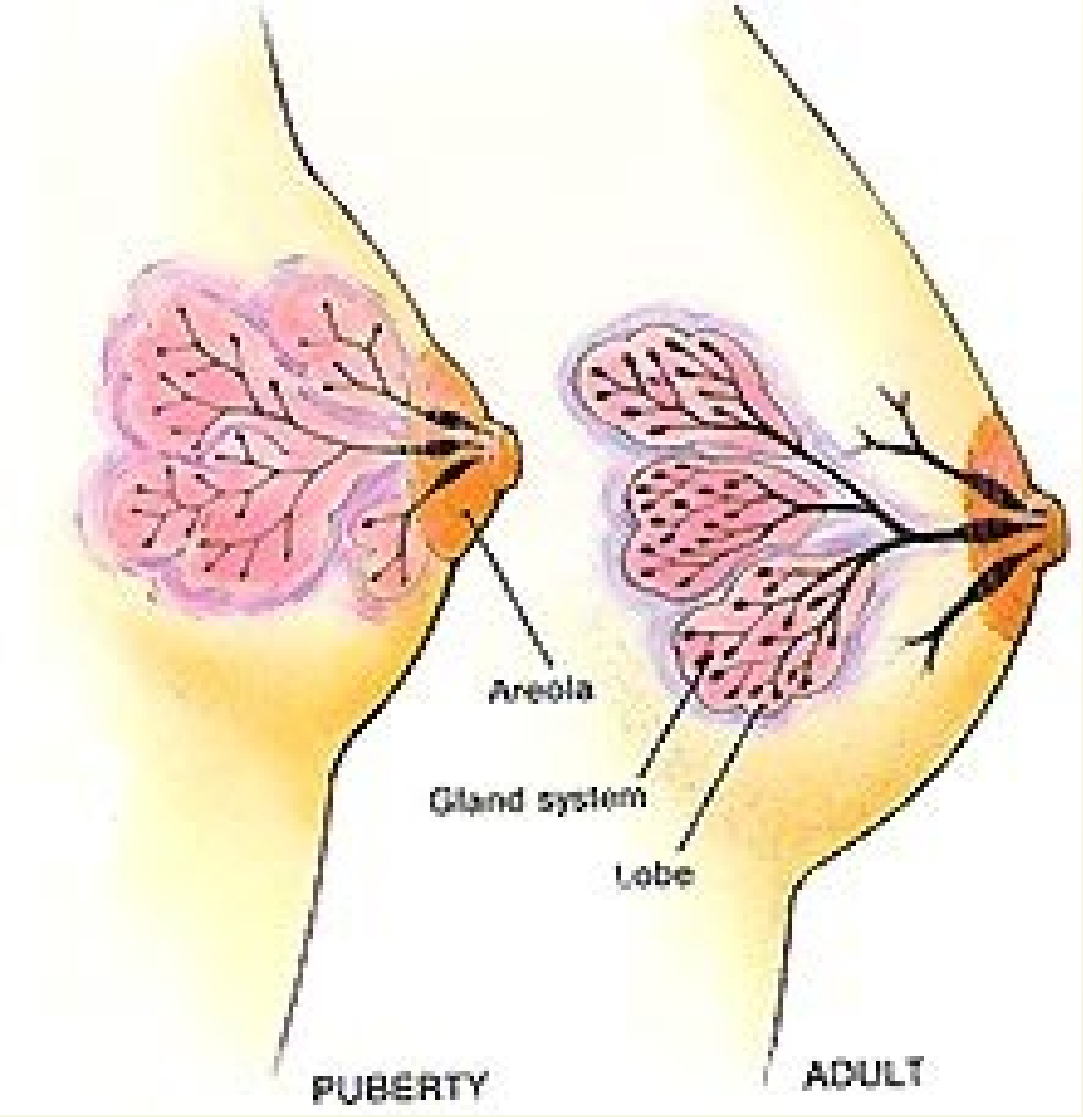
- Prepuberty
- Puberty
- Young Adult
- Mature Adult
- Pregnancy-Lactation
- Post-lactation Mature Adult
- Post-Menopausal

# Breast Development: Prepuberty

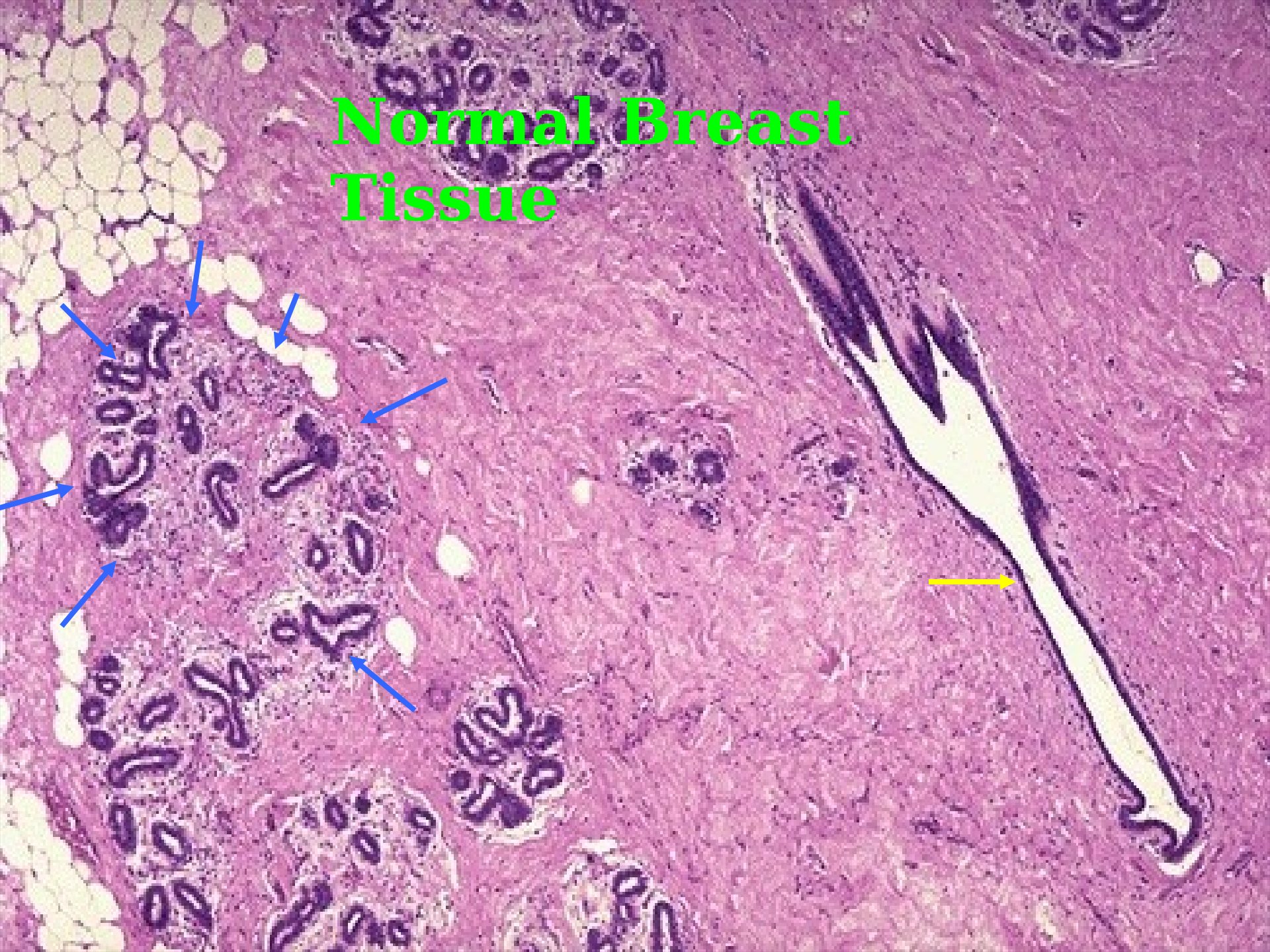
- Breasts in resting state
- Ducts present, but nonfunctional

# Breast Development: Puberty

- Ducts elongated due to estrogen
- Breast buds appear


Areola
Gland system
Lobe
PUBERTY
ADULT

# Normal Breast Tissue

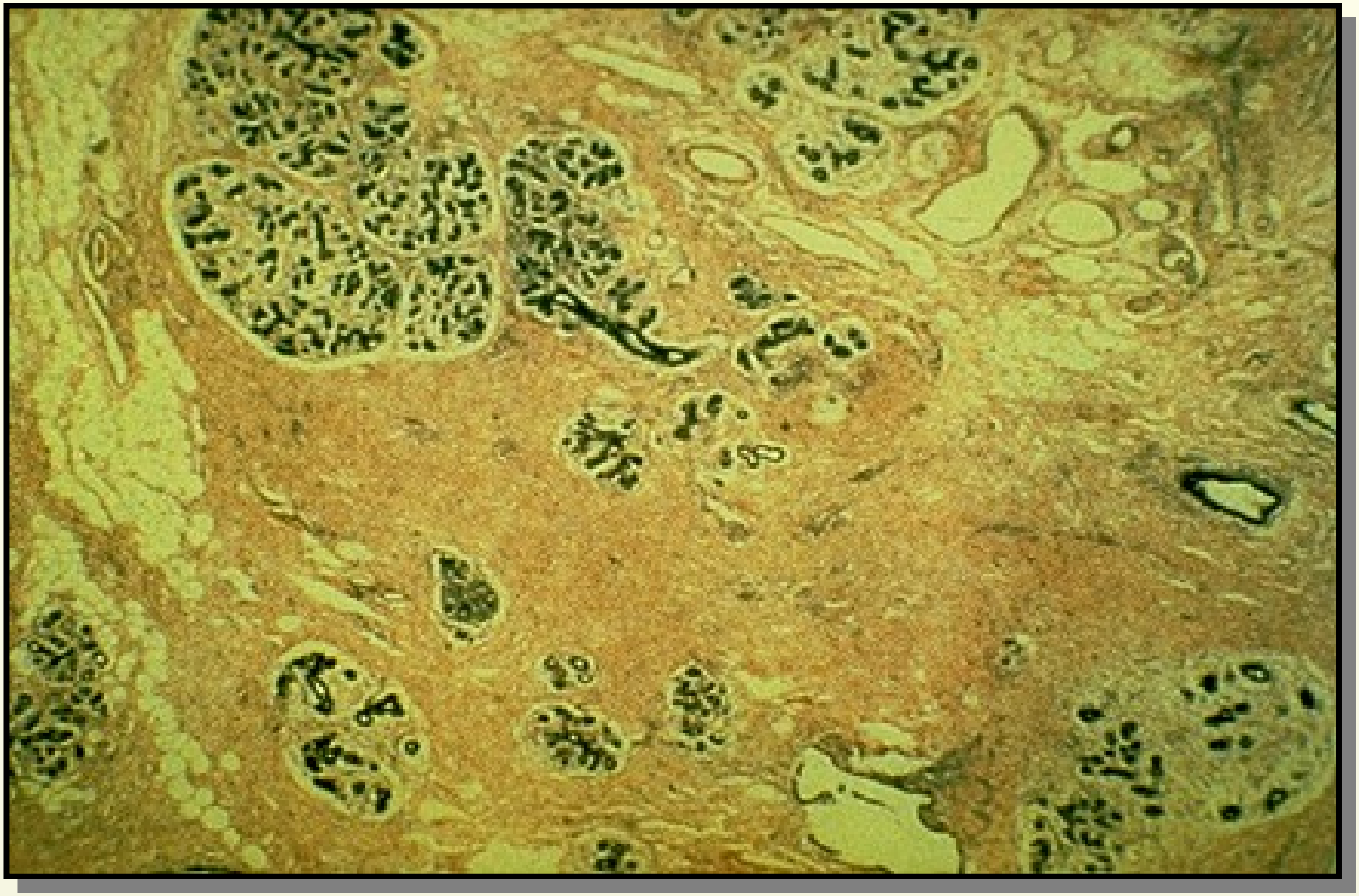


# Breast Development: Young Adult

- Effects of progesterone are directly influenced by initiation of ovulation
- Ducts elongate
- Side branches of ducts and lobular elements begin to form

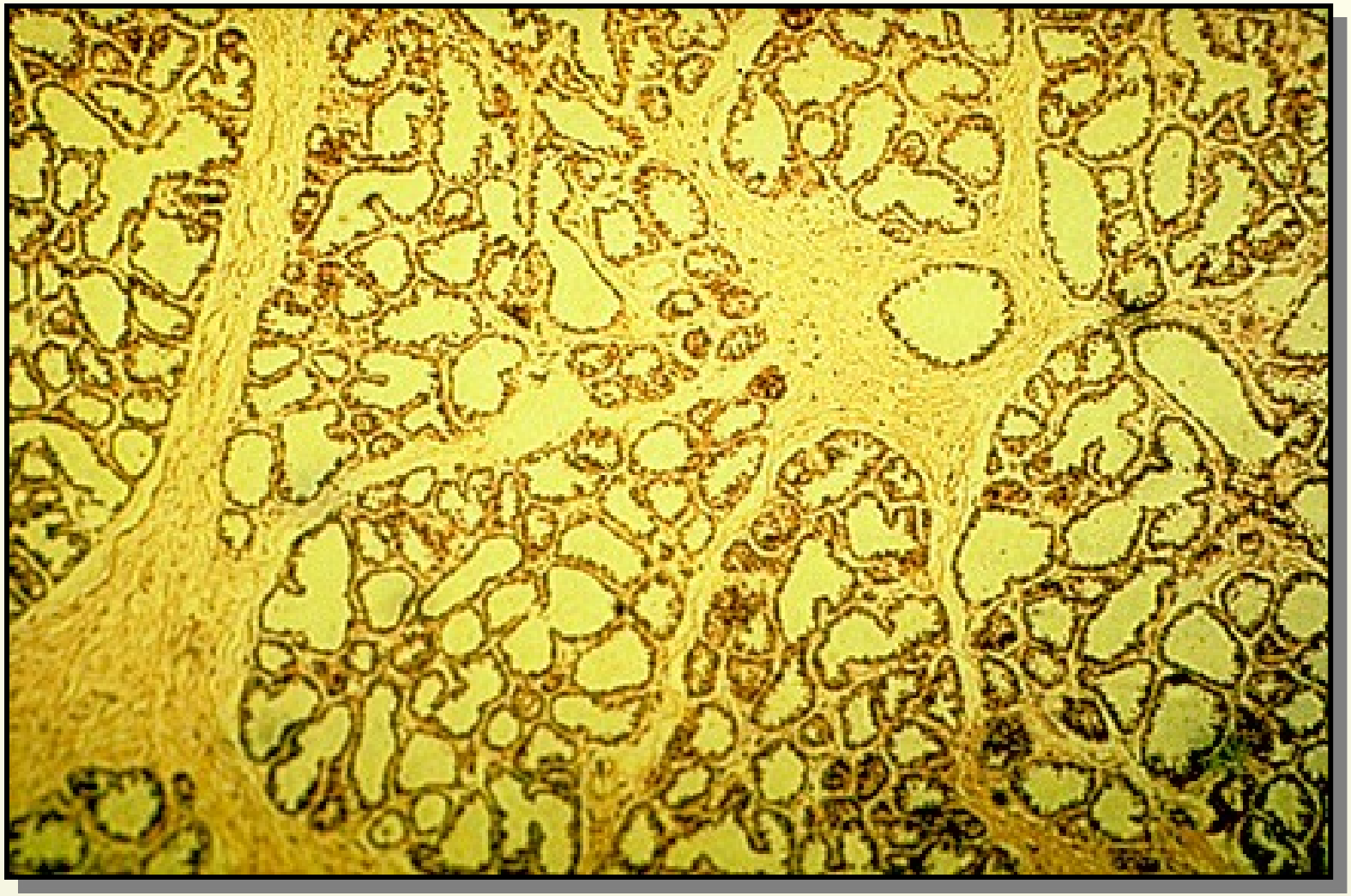
# Breast Development: Mature Adult

- Breasts become pendulous
- Lobular elements well formed in resting state



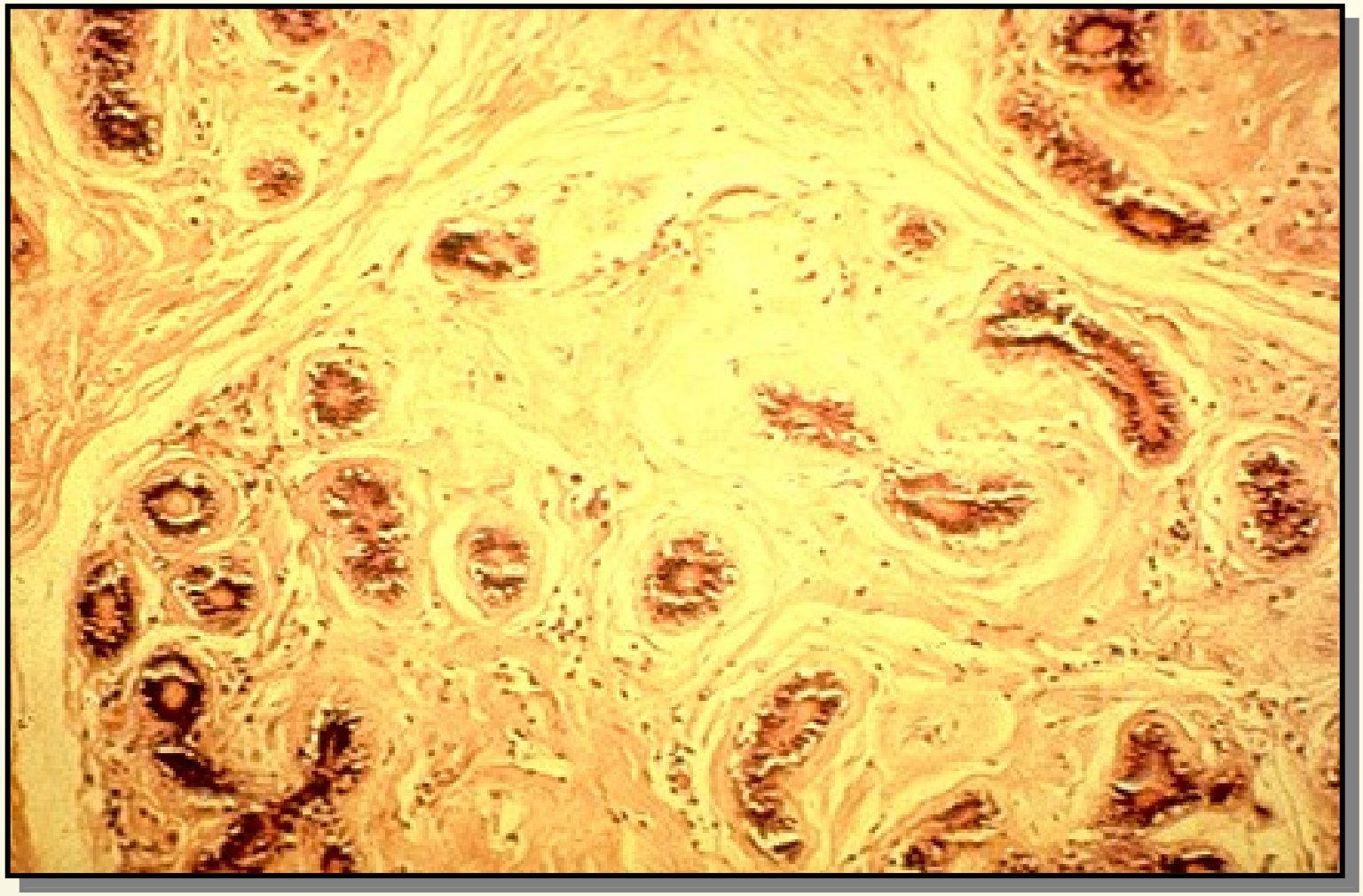
# Breast Development: Pregnancy-Lactation

- The proximal ducts grow and begin branching.
- The breast enlarges and there is vascular engorgement with areolar pigmentation.
- There is a 180% increase in mammary blood flow, and the breast increases to about twice its normal weight.



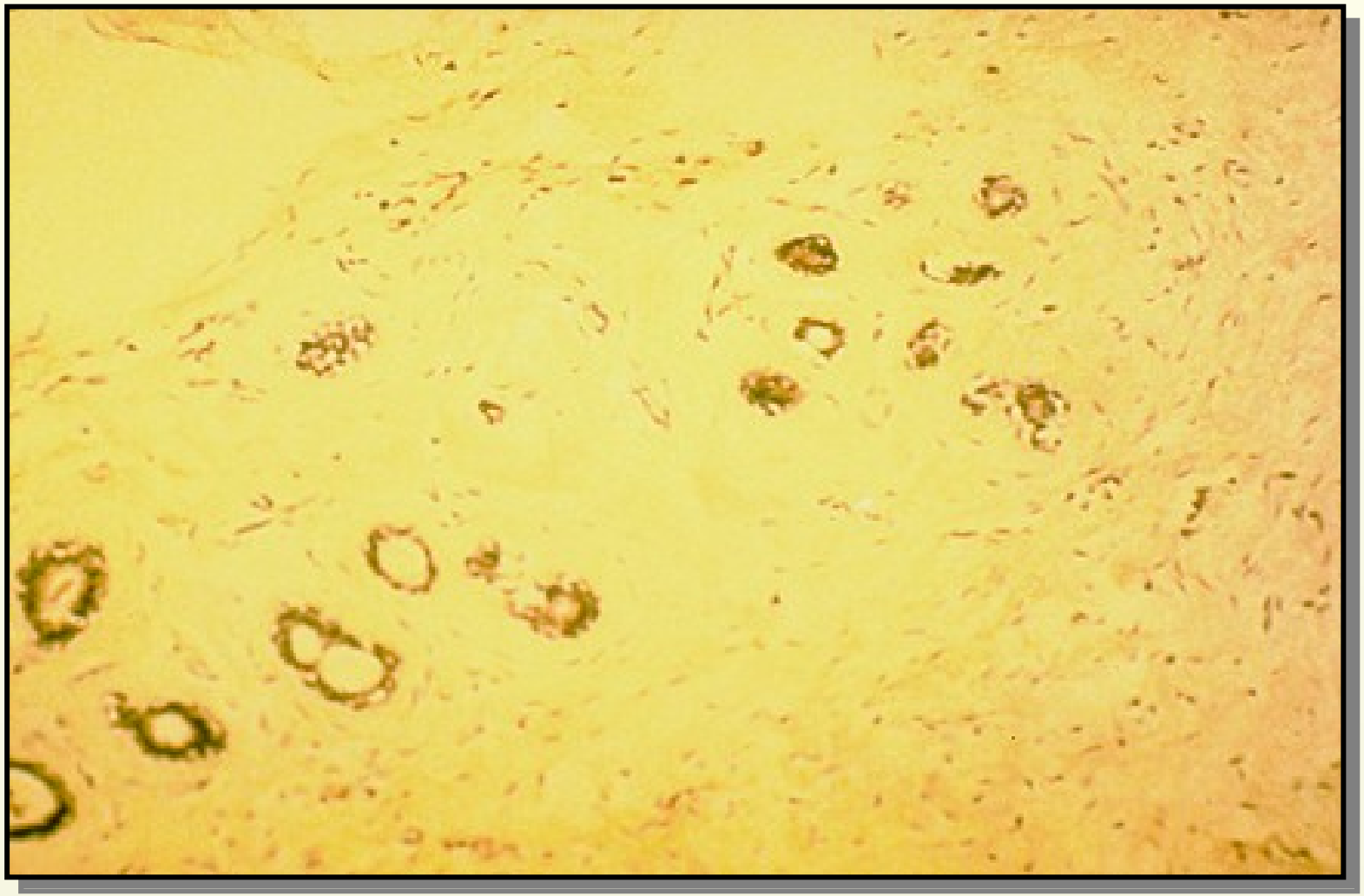
# Breast Development: Post-Lactation Mature Adult

- As menopause approaches, the lobules begin to recede
- Fibroconnective tissue begins to predominate
- Cysts may form as this process occurs



# Breast Development: Post-Menopausal

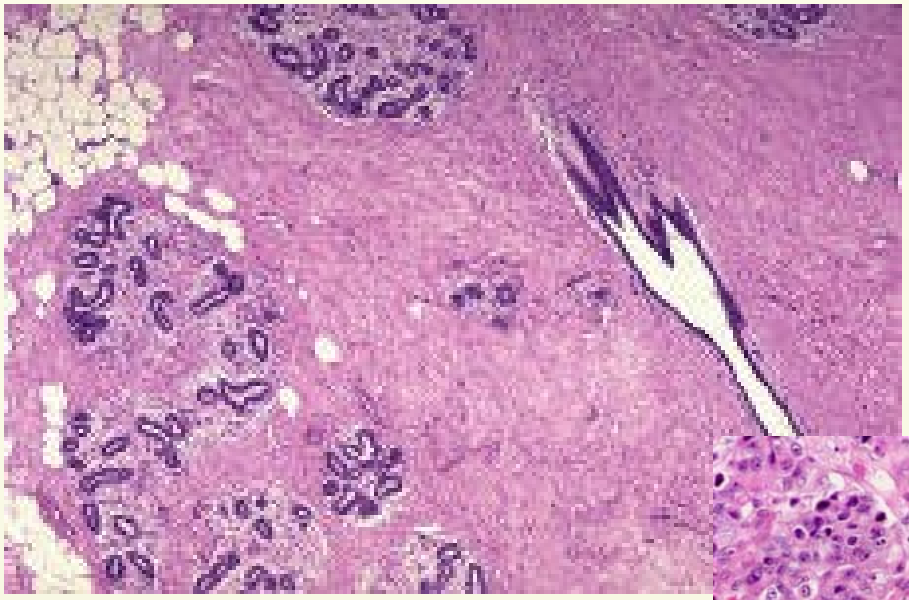
- Involution and atrophy of lobular elements
- Gradual breakdown of stromal and connective tissue
- Adipose becomes the predominant tissue of the breast



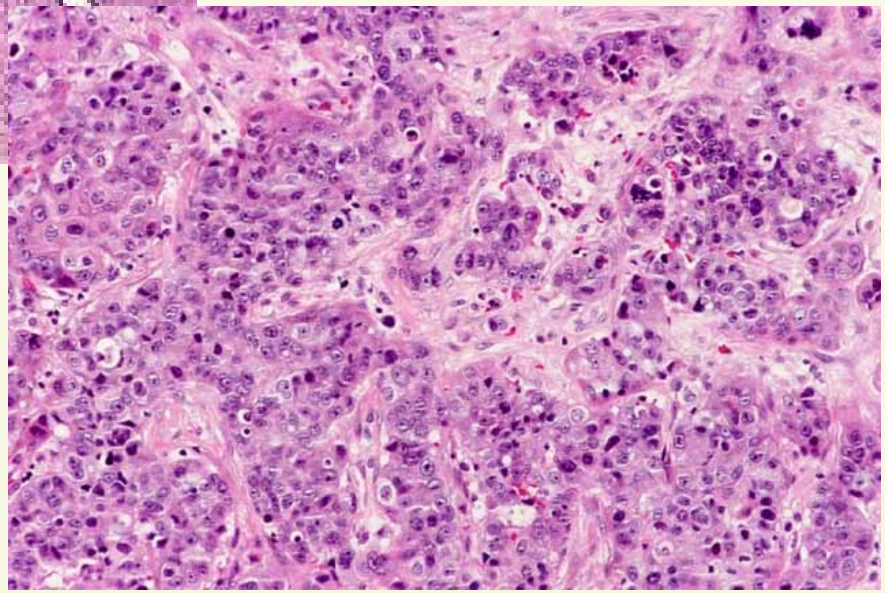
# Breast Cancer Histology

- Two major types: Ductal and Lobular
- Over a dozen different sub-types (medullary, mucinous, tubular)
- Also two types of in-situ carcinoma, ductal and lobular.

# Normal vs. Malignant

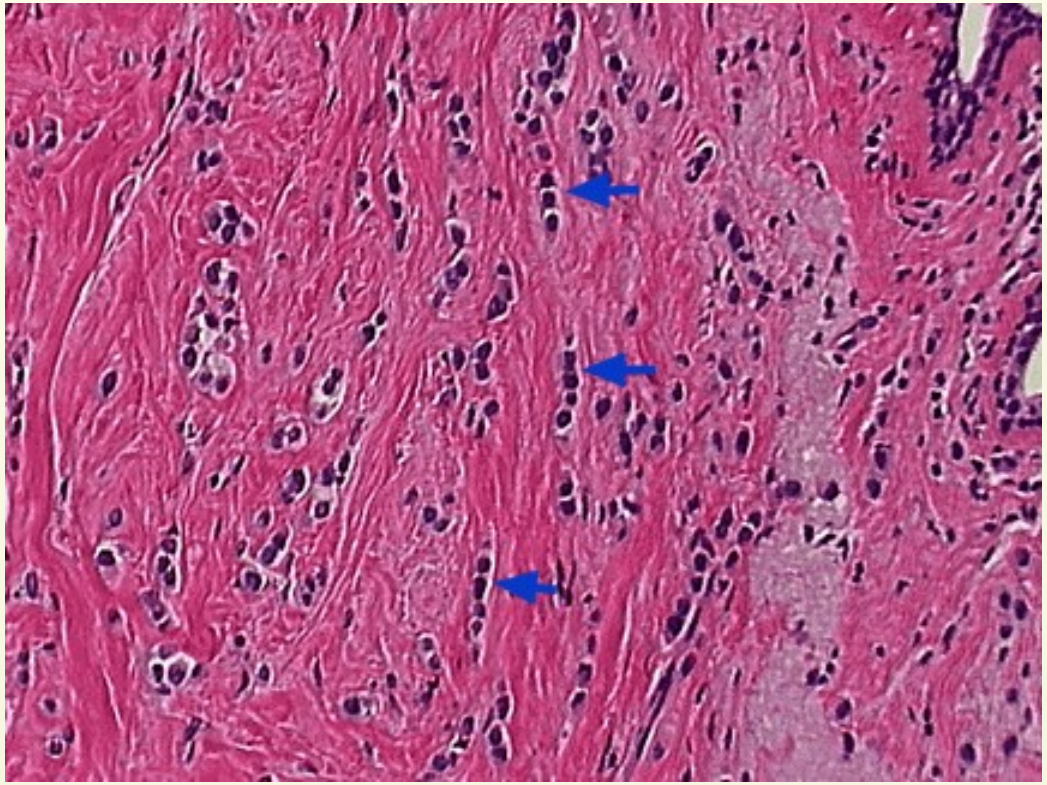


**Normal**

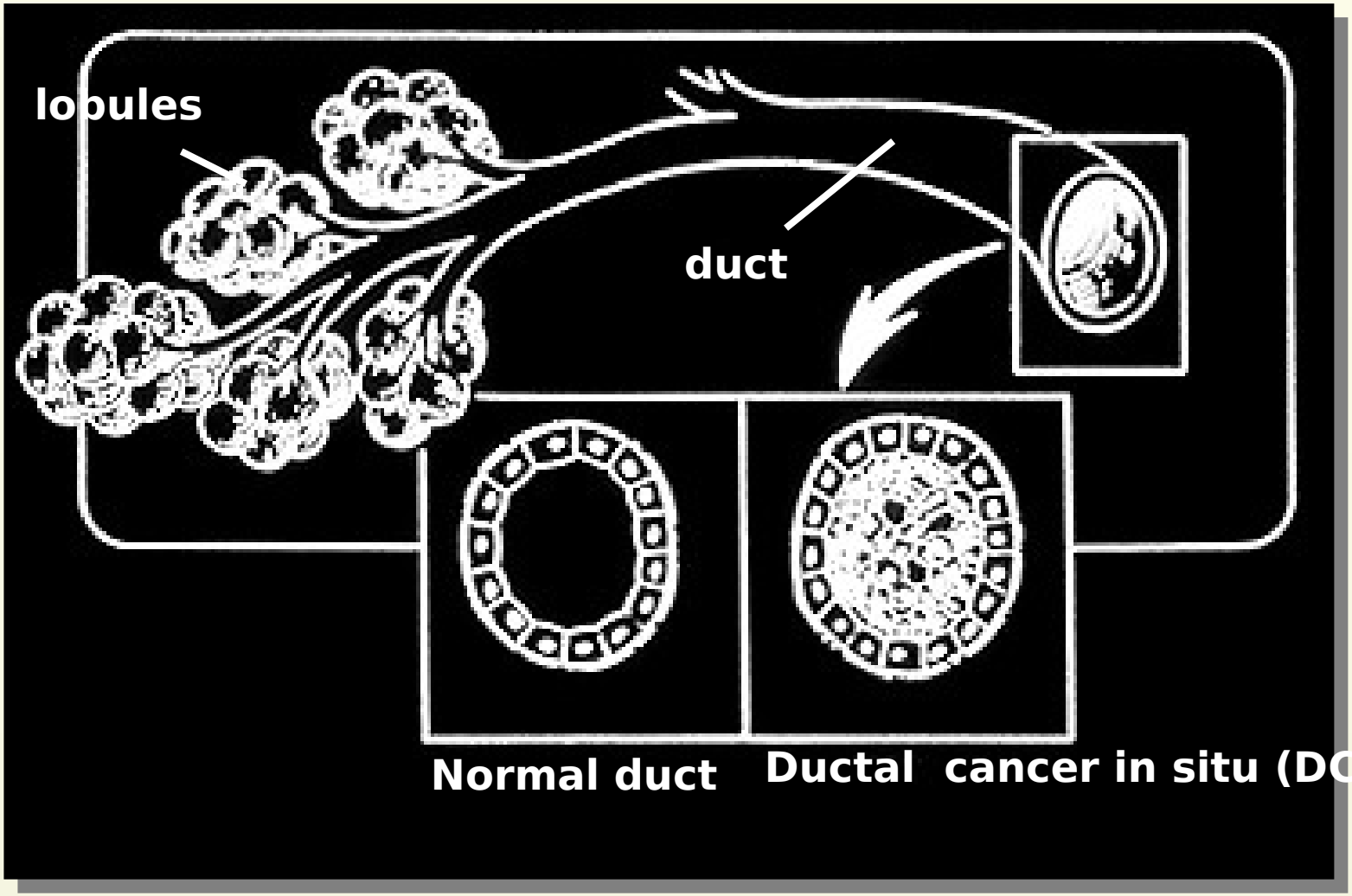


**Ductal CA**

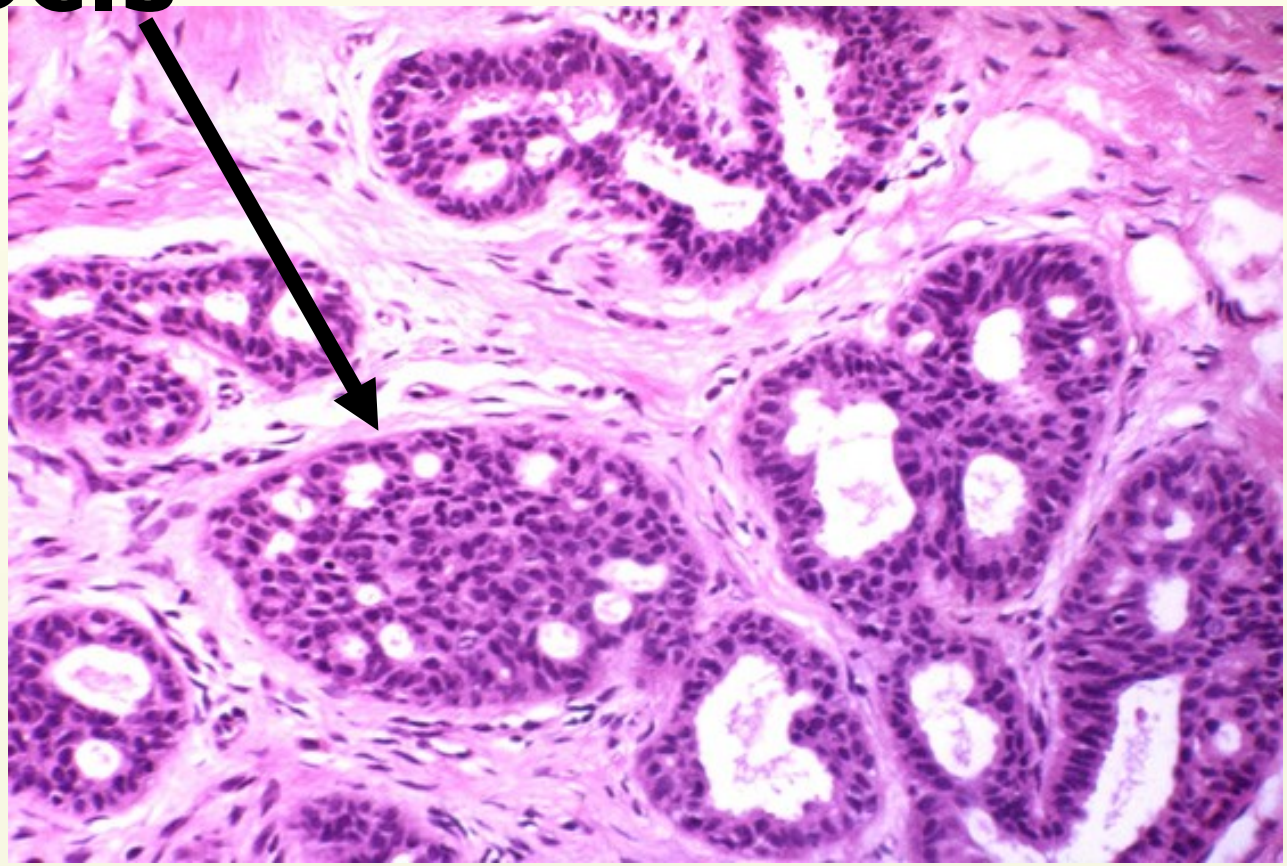
# Lobular CA



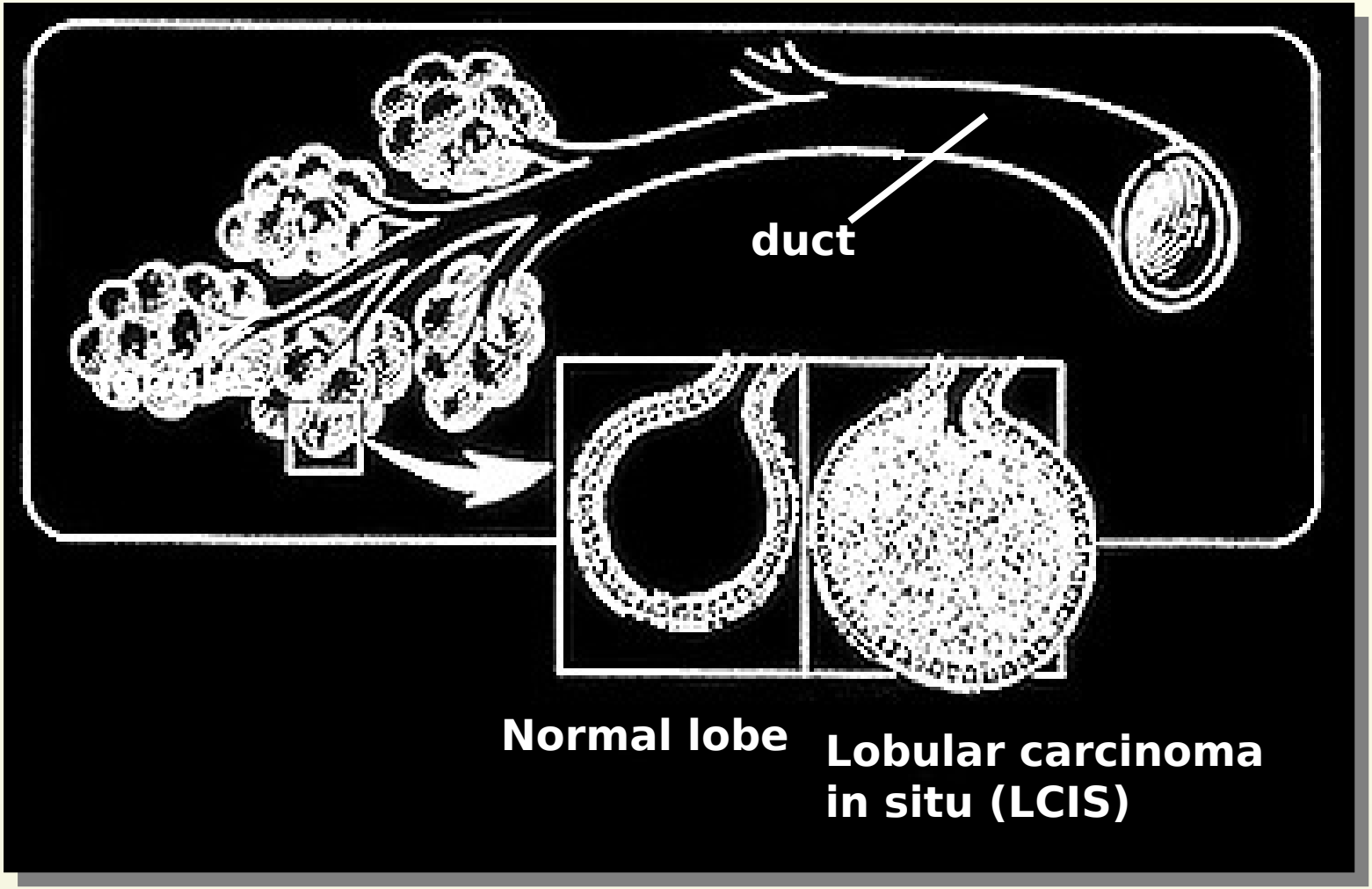
# Ductal Carcinoma in Situ

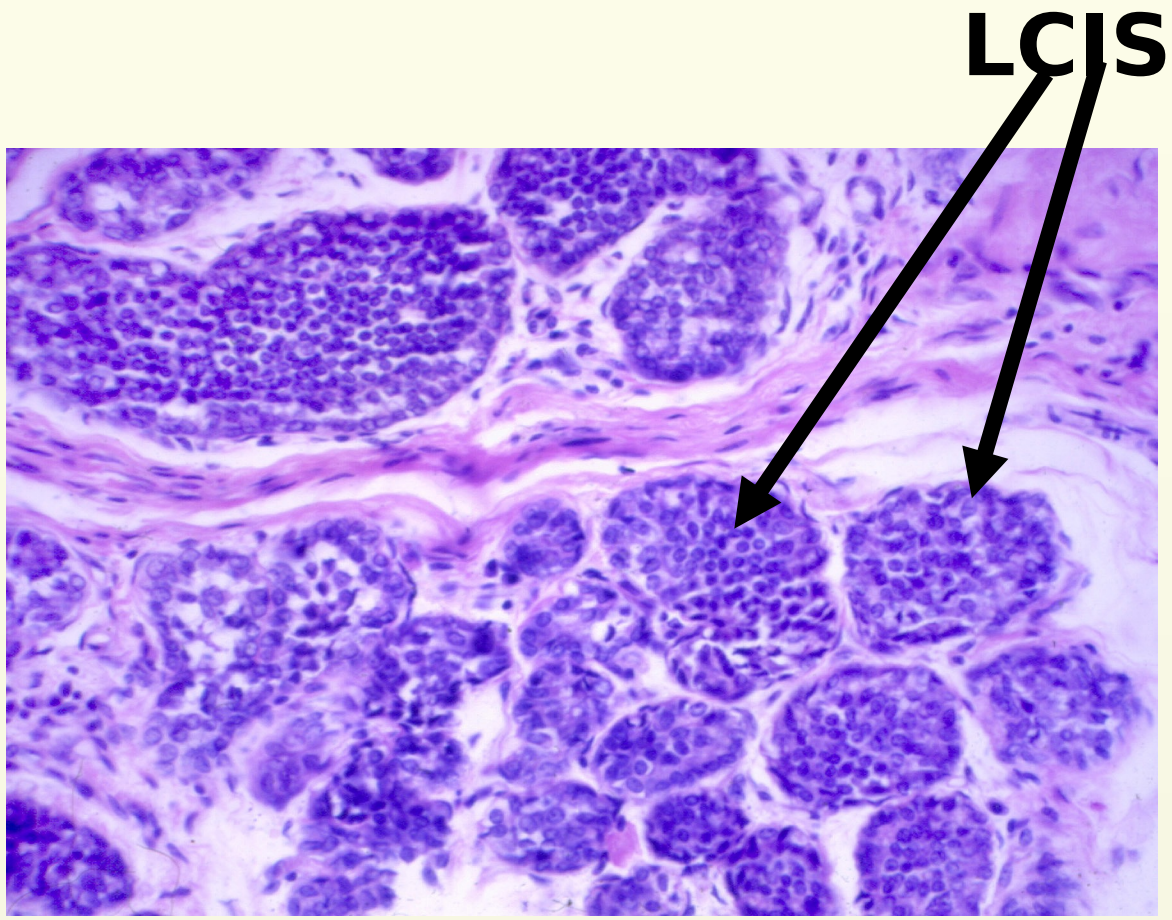


DCIS



# Lobular Carcinoma in Situ




LCIS

# Questions?